

What is claimed is:

1. A purified BMP-8 protein comprising at least one of the following sequences:

- 5 a) Arg-His-Glu-Leu-Tyr-Val-Ser-Phe-Gln-Asp-Leu-Gly-Trp-
Leu-Asp-Trp-Val-Ile-Ala-Pro-Gln-Gly-Tyr (SEQ ID NO: 1);
- 10 b) Leu-Ser-Ala-Thr-Ser-Val-Leu-Tyr-Tyr-Asp-Ser-Ser-Asn-
Asn-Val-Ile-Leu-Arg (SEQ ID NO: 2);
- c) Ala-Cys-Cys-Ala-Pro-Thr-Lys (SEQ ID NO: 3);
- 15 d) Thr-Asn-Glu-Leu-Pro-Pro-Pro-Asn-Lys-Leu-
Pro-Gly-Ile-Phe-Asp-Asp-Val-His-Gly-Ser-His-Gly-Arg
(SEQ ID NO: 4); and
- e) amino acid #143 (Ala) to #281 (His) of Figure 2.

20 2. The protein of claim 1 further characterized by the ability to induce the formation of cartilage and/or bone.

3. A purified protein characterized by the amino acid sequence encoded by the DNA of ATCC #75010.

25 4. A purified BMP-8 protein comprising amino acid #143 to #281 of Figure 2.

5. A BMP-8 polypeptide sequence comprising amino acid #1 -
30 #281 of Figure 2.

6. A DNA sequence encoding a BMP-8 protein said DNA sequence comprising at least one of the following sequences

35 a)

GTG CAC CTG CTG AAG CCG CAC GCG GTC CCC AAG GCG TGC TGC GCG CCC
 ACC AAG CTG AGC GCC ACT TCC GTG CTC TAC TAC GAC AGC AGC AAC AAC
 GTC ATC CTG CGC AAG CAC CGC AAC ATG GTG GTC CGC GCC TGC GGC TGC
 CAC (SEQ ID NO: 7);

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b)

GAC TGG GTC ATC GCC CCC CAA GGC TAC TCA GCC TAT TAC TGT GAA GGG
 GAG TGC TCC TTC CCG CTG GAC TCC TGC ATG AAC GCC ACC AAC CAC GCC
 ATC CTG CAG TCC CTG (SEQ ID NO: 9); and

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c)

GAC GTC CAC GGC TCC CAC GGC CGG CAG GTG
 TGC CGTCGG CAC GAG CTG AGC TTC CAG GAC CTG GGC TGG CTG (SEQ ID
 NO: 11).

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d) the nucleotide sequence comprising nucleotide #1 through
 #843 of Figure 2; and

e) the nucleotide sequence comprising nucleotide #430 through
 #843 of Figure 2.

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7. An isolated DNA sequence comprising the nucleotide sequence
 set forth in Figure 2 from nucleotide #1 to #843.

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8. An isolated DNA sequence comprising the nucleotide sequence
 set forth in Figure 2 from nucleotide #430 through #843.

9. The DNA sequence of ATCC #75010 encoding BMP-8.

10. A purified protein produced by the steps of:

(a) culturing a cell transformed with a vector comprising
a DNA sequence of claim 6 said DNA sequence in operative
association with an expression control sequence therefor;
and

(b) recovering, isolating and purifying from said culture
medium a protein characterized by the ability to induce
cartilage and/or bone formation.

11. A purified protein produced by the steps of:

(a) culturing a cell transformed with a vector containing
the DNA sequence of claim 9 encoding BMP-8 said sequence
in operative association with an expression control sequence
therefor; and

(b) recovering, isolating and purifying from said culture
medium a BMP-8 protein characterized by the ability to
induce cartilage and/or bone formation.

12. A purified BMP-8 protein produced by the steps of

(a) culturing a cell transformed with a vector having a
DNA sequence of claim 7 said DNA sequence in operative
association with an expression control sequence therefore;
and

(b) recovering, isolating, and purifying from said culture medium a protein characterized by an amino acid sequence comprising amino acid #143 to #281 of Figure 2.

5 13. A host cell transformed with a DNA of claim 6.

14. A host cell transformed with the DNA of claim 7.

15. A host cell transformed with the DNA of claim 8.

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16. A host cell transformed with the DNA of claim 9.

17. A method for producing a BMP-8 protein said method comprising the steps of:

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(a) culturing a cell transformed with a vector having a DNA sequence of claim 6 said DNA sequence in operative association with an expression control sequence therefor; and

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(b) recovering, isolating and purifying from said culture medium a protein characterized by the ability to induce cartilage and/or bone formation.

18. A method for producing a purified BMP-8 protein said method comprising the steps of

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(a) culturing a cell transformed with a vector having a DNA sequence of claim 9 in operative association with an

expression control sequence therefor; and

(b) recovering, isolating and purifying from said culture medium a protein characterized by the ability to induce cartilage and/or bone formation.

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19. A method for producing a purified BMP-8 protein said method comprising the steps of:

(a) culturing a cell transformed with a vector having a DNA sequence comprising nucleotide #1 through #843 of Figure 2 said DNA sequence in operative association with an expression control sequence therefore; and

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(b) recovering, isolating, and purifying from said culture medium a protein characterized by an amino acid sequence comprising amino acid #143 to #281 of Figure 2.

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20. A pharmaceutical composition comprising an effective amount of a BMP-8 protein in admixture with a pharmaceutically acceptable vehicle.

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21. A pharmaceutical formulation for bone and/or cartilage formation comprising an effective amount of a BMP-8 protein in a pharmaceutically acceptable vehicle.

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22. A composition of claim 13 further comprising a matrix for supporting said composition and providing a surface for bone and/or cartilage formation.

23. The composition of claim 14 wherein said matrix comprises a material selected from the group consisting of hydroxyapatite, collagen, polylactic acid and tricalcium phosphate.

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24. A pharmaceutical composition for wound healing and tissue repair said composition comprising an effective amount of a BMP-8 protein in a pharmaceutically acceptable vehicle.

10 25. A BMP-8 protein comprising a disulfide-linked dimer wherein at least one subunit comprises amino acid #143 through #281 of Figure 2.

